

AMENDMENTS TO THE CLAIMS

Please replace all prior versions, and listings, of claims in the application with the following list of claims.

1-18. (Canceled)

19. (Currently amended) A DNA construct for providing a heterologous immunoglobulin in the milk of a non-human transgenic mammal, the DNA construct comprising:

a promoter sequence ~~that results in the preferential expression of~~ a operably-linked to a heterologous immunoglobulin protein-coding sequence, wherein the promoter sequence preferentially expresses the heterologous immunoglobulin protein-coding sequence in mammary gland epithelial cells,

~~an immunoglobulin protein-coding sequence; and~~

a 3' non-coding sequence; ~~and~~

wherein the heterologous immunoglobulin protein-coding sequence is between the promoter sequence and the 3' non-coding sequence, and wherein the heterologous immunoglobulin protein-coding sequence comprises a sequence that encodes an immunoglobulin heavy chain and a sequence that encodes an immunoglobulin light chain, a unique restriction site between the promoter and the 3' non-coding sequence,

wherein the immunoglobulin protein-coding sequence is inserted into the restriction site; and

wherein said DNA construct is integrated into the genome of said mammal in such a way that said protein-coding sequence is expressed in the mammary gland of said mammal, and secreted from said mammary gland in the milk of said mammal; and,

wherein the expressed immunoglobulin protein sequence is primarily or completely of human origin;

wherein each coding region may be expressed individually and,

wherein the immunoglobulin protein-coding sequence encodes a heavy chain-coding region;

~~wherein said immunoglobulin protein-coding sequence encodes a light chain coding region.~~

20. (Canceled)
21. (Currently amended) The DNA construct of claim 19, wherein ~~said~~the promoter sequence is ~~selected from the group consisting of~~ a beta lactoglobulin promoter sequence, a whey acid protein promoter sequence, ~~and theor a~~ lactalbumin promoter sequence.
- 22-24. (Canceled)
25. (Currently amended) The DNA construct of claim 19, wherein ~~said~~the promoter sequence is a casein promoter sequence.
26. (Currently amended) The DNA construct of claim 19, wherein the heterologous immunoglobulin protein-coding sequence is inserted into ~~restriction site~~ is an XhoI restriction site.
27. (Currently amended) The DNA construct of claim 19, wherein the 3' non-coding sequence encodes ~~is a~~ 3' non-coding region from a mammary-specific gene.
28. (Canceled)
29. (Currently amended) A mammary gland epithelial cell comprising the DNA construct of claim 19, ~~and a construct comprising an immunoglobulin protein-coding sequence which encodes both a light chain and a heavy chain, operatively linked to a promoter sequence that results in the preferential expression of the protein-coding sequence in mammary gland epithelial cells, wherein the cell expresses the light and heavy chains separately and secretes a heterologous, assembled immunoglobulin comprising the light and heavy chains.~~

30. (Currently amended) ~~The~~ A mammary gland epithelial cell of claim 29, ~~comprising the construct of claim 19 further comprising wherein the cell expresses the light and heavy chains separately and the sequences so expressed are fully human sequences; and,~~
wherein ~~the~~said promoter sequence is ~~selected from a group consisting of:~~a beta lactoglobulin promoter sequence, a casein promoter sequence, a whey acid protein promoter sequence, ~~and~~ ~~the~~or a lactalbumin promoter sequence.
- 31-35. (Canceled)
36. (New) The DNA construct of claim 19, wherein the sequence that encodes an immunoglobulin heavy chain and the sequence that encodes an immunoglobulin light chain are human sequences.
37. (New) The mammary gland epithelial cell of claim 29, wherein the sequence that encodes an immunoglobulin heavy chain and the sequence that encodes an immunoglobulin light chain are human sequences.
38. (New) A DNA construct for providing a heterologous immunoglobulin in the milk of a non-human transgenic mammal, the DNA construct comprising:
(a) a first expression cassette comprising a first promoter sequence operably-linked to a heterologous immunoglobulin heavy chain-coding sequence, wherein the promoter sequence preferentially expresses the heterologous immunoglobulin heavy chain-coding sequence in mammary gland epithelial cells, and a first 3' non-coding sequence,
wherein the heterologous immunoglobulin heavy chain-coding sequence is between the first promoter sequence and the first 3' non-coding sequence; and
(b) a second expression cassette comprising a second promoter sequence operably-linked to a heterologous immunoglobulin light chain-coding sequence, wherein the promoter

sequence preferentially expresses the heterologous immunoglobulin light chain-coding sequence in mammary gland epithelial cells, and a second 3' non-coding sequence, wherein the heterologous immunoglobulin light chain-coding sequence is between the second promoter sequence and the second 3' non-coding sequence.

39. (New) The DNA construct of claim 38, wherein the first promoter sequence is a beta lactoglobulin promoter sequence, a whey acid protein promoter sequence, a lactalbumin promoter sequence, or a casein promoter sequence and/or the second promoter sequence is a beta lactoglobulin promoter sequence, a whey acid protein promoter sequence, a lactalbumin promoter sequence, or a casein promoter sequence.
40. (New) The DNA construct of claim 39, wherein the first promoter sequence and second promoter sequence are the same.
41. (New) The DNA construct of claim 38, wherein the heterologous immunoglobulin heavy chain-coding sequence and/or the heterologous immunoglobulin light chain-coding sequence is inserted into an XhoI restriction site.
42. (New) The DNA construct of claim 38, wherein the first 3' non-coding sequence encodes a 3' non-coding region from a mammary-specific gene and/or the second 3' non-coding sequence encodes a 3' non-coding region from a mammary-specific gene.
43. (New) The DNA construct of claim 38, wherein the heterologous immunoglobulin heavy chain-coding sequence and the heterologous immunoglobulin light chain-coding sequence are human sequences.
44. (New) A mammary gland epithelial cell comprising the DNA construct of claim 38.
45. (New) The mammary gland epithelial cell of claim 44, wherein the first promoter sequence

is a beta lactoglobulin promoter sequence, a casein promoter sequence, a whey acid protein promoter sequence, or a lactalbumin promoter sequence, and wherein the second promoter sequence is a beta lactoglobulin promoter sequence, a casein promoter sequence, a whey acid protein promoter sequence, or a lactalbumin promoter sequence.

46. (New) The mammary gland epithelial cell of claim 44, wherein the heterologous immunoglobulin heavy chain-coding sequence and the heterologous immunoglobulin light chain-coding sequence are human sequences.

47. (New) A mammary gland epithelial cell comprising:

(a) a first DNA construct comprising a first promoter sequence operably-linked to a heterologous immunoglobulin heavy chain-coding sequence, wherein the first promoter sequence preferentially expresses the heterologous immunoglobulin heavy chain-coding sequence in mammary gland epithelial cells, and a first 3' non-coding sequence,

wherein the heterologous immunoglobulin heavy chain-coding sequence is between the first promoter sequence and the first 3' non-coding sequence; and

(b) a second DNA construct comprising a second promoter sequence operably-linked to a heterologous immunoglobulin light chain-coding sequence, wherein the second promoter sequence preferentially expresses the heterologous immunoglobulin light chain-coding sequence in mammary gland epithelial cells, and a second 3' non-coding sequence, wherein the heterologous immunoglobulin light chain-coding sequence is between the second promoter sequence and the second 3' non-coding sequence.

48. (New) The mammary gland epithelial cell of claim 47, wherein the first promoter sequence is a beta lactoglobulin promoter sequence, a casein promoter sequence, a whey acid protein promoter sequence, or a lactalbumin promoter sequence, and wherein the second promoter sequence is a beta lactoglobulin promoter sequence, a casein promoter sequence, a whey acid protein promoter sequence, or a lactalbumin promoter sequence.